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ABSTRACT

Through a review of a number of surveys and research reports, an overview was prepared of the implications of increasing office technology on industry and educational requirements in the United Kingdom. The review found that business and industry are involved in an increasingly rapid change to new equipment and that the distinctions between office, communications, and computer equipment are disappearing. More skills are needed by staff members, especially more in-depth knowledge of office systems based on integrated new technology. However, the review concluded that colleges of further education are not often reacting adequately to the challenge. Equipment and supportive material are lacking and many colleges are becoming less competitive in this area, compared to outside training agencies. Although syllabuses are being modified to relate to specific aspects of new office technology, no move appears to be taking place toward the adoption of a curriculum capable of giving a more generalized approach to this expanding technology. It was recommended that as new and more powerful equipment is increasingly introduced into offices, more attention be paid in education to the understanding of the processes being served by this equipment, so that when the equipment changes, more fundamental skills associated with information processing and interpretation remain useful. This requires a system rather than a component approach. In addition, teachers should take courses to prepare for the task ahead, and curriculum must be developed to meet it. (KC)

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FURTHER EDUCATION UNIT

An Occasional Paper

Towards the electronic office

An overview of the curricular implications of new technology for office and business education and training

Christine Disney
Computer Consultant

CE 037374

U.S. DEPARTMENT OF EDUCATION
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Dear Sir/Madam,

TOWARDS THE ELECTRONIC OFFICE

I enclose herewith a copy of an FEU Occasional Paper commissioned by us from Christine Disney, Computer Consultant. It reviews the curricular implications of new office technology, as they appeared in 1982. The earlier sections of the document describe a growing awareness and use of Information Technology by industry and commerce. The latter sections describe the ways in which the training and education systems are reacting to this rapidly changing situation.

Many of the conclusions reached by Miss Disney are far from reassuring for FE colleges. There is, inevitably perhaps in a fast moving field, an urgent need for staff development. Equipment and support material is lacking and many colleges are becoming less competitive in this area, compared to outside training agencies. More disturbing is the strong hint that comes through from time to time regarding the nature of the curricula being provided. Most, but by no means all, of the major examining/validating bodies in this area, are generating or modifying syllabuses to relate to specific aspects of new office technology; but there appears to be no move towards the adoption of a curriculum capable of giving a more generalised approach to this expanding technology.

It may well be that as new and more powerful equipment is increasingly introduced into offices, more attention should be paid in education to the understanding of the processes being served by this equipment; so that when the equipment changes, more fundamental skills associated with information processing and interpretation, remain useful. This requires a systems rather than a components approach - a strategy long adopted in other areas of technological education.

Christine Disney also draws attention to the need for re-training as well as initial training; not only for conventional office workers but for managers, and increasingly "shop floor" and other blue-collar staff.

The FEU hopes to follow up, as best it can, many of the recommendations made in this report; but obviously, more needs to be done by many others.

Yours faithfully

Jack Mansell

JACK MANSELL
Chief Officer

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b) to determine priorities for action to improve the provision of further education and to make recommendations as to how such improvement can be effected;

c) to carry out studies in further education and to support investigations of and experimentation in, and the development of further education curricula and to contribute to and assist in the evaluation of initiatives in further education;

d) to disseminate and publish information and to assist in the dissemination and publication of information about recommendations for and experiments and developments in further education.

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1. Introduction

1. This report was commissioned to provide a rapid overview of the curricular implications of new office technology in England and Wales.

Over the last twenty years the parallel growth of numerical data processing from manual, accounting machines, punched cards to sophisticated computer equipment and the development of text handling devices using manual typewriters, electrical and electronic versions and modern word processors, has tended to polarise the different techniques and build unnecessary barriers between similar processes. However, by the end of the 1970's, the methods and techniques started to merge under the heading of Information Processing and with it the need to move from separate topics and skills towards a wider systems based concept.

This latter approach requires a pattern of education and training built around a common core of integrated subjects providing the fundamental knowledge, understanding and skills, complemented by theory and practical options for chosen specialisms. Figure 1 overleaf provides a diagrammatic view of the coordination aspects of office automation., An elaborated definition of Integrated Office Automation and other terms are provided in the Glossary Appendix C.

2. In Business Education (including clerical, commercial, office studies, administration and management areas) this can be identified as a requirement for students to understand the system elements of the office environment to such an extent that they can easily relate to the changes required as new technology is introduced. It should also enable office staff to take advantage of new opportunities, greater responsibilities and different career progression as they understand and move into different areas of business work.

3. During 1980-81 a number of study groups, surveys, papers and reports provided a review of the education and training implications, with specific reference to current and future technology developments, in the areas of business, office studies and administration (References 1-5).
In particular, the RSA Report *Office technology* (1) drew together responses and views prompted by a widely circulated consultative document. It provided a comprehensive summary of the situation with the aims of:

a. alerting those concerned with the provision of education and training to the extent and nature of the changes that are expected;

b. offering guidance on the curricular implications; and

c. advising schools, colleges and others on staff development and on the acquisition of hardware and software.

4. This document provides a summary of the situation 12-18 months from those initial reports and at the end of Information Technology Year (IT 82) which has greatly increased public awareness about new technology. It looks at industry and commerce which is reacting in several different ways to the information challenge and having consequent effects upon the education and training requirements. The recent and current developments by the validating bodies and training organisations is reviewed and the impact, response and problems within the schools and colleges in meeting new requirements is documented. Finally, the current situation is summarised and recommendations made for future action.

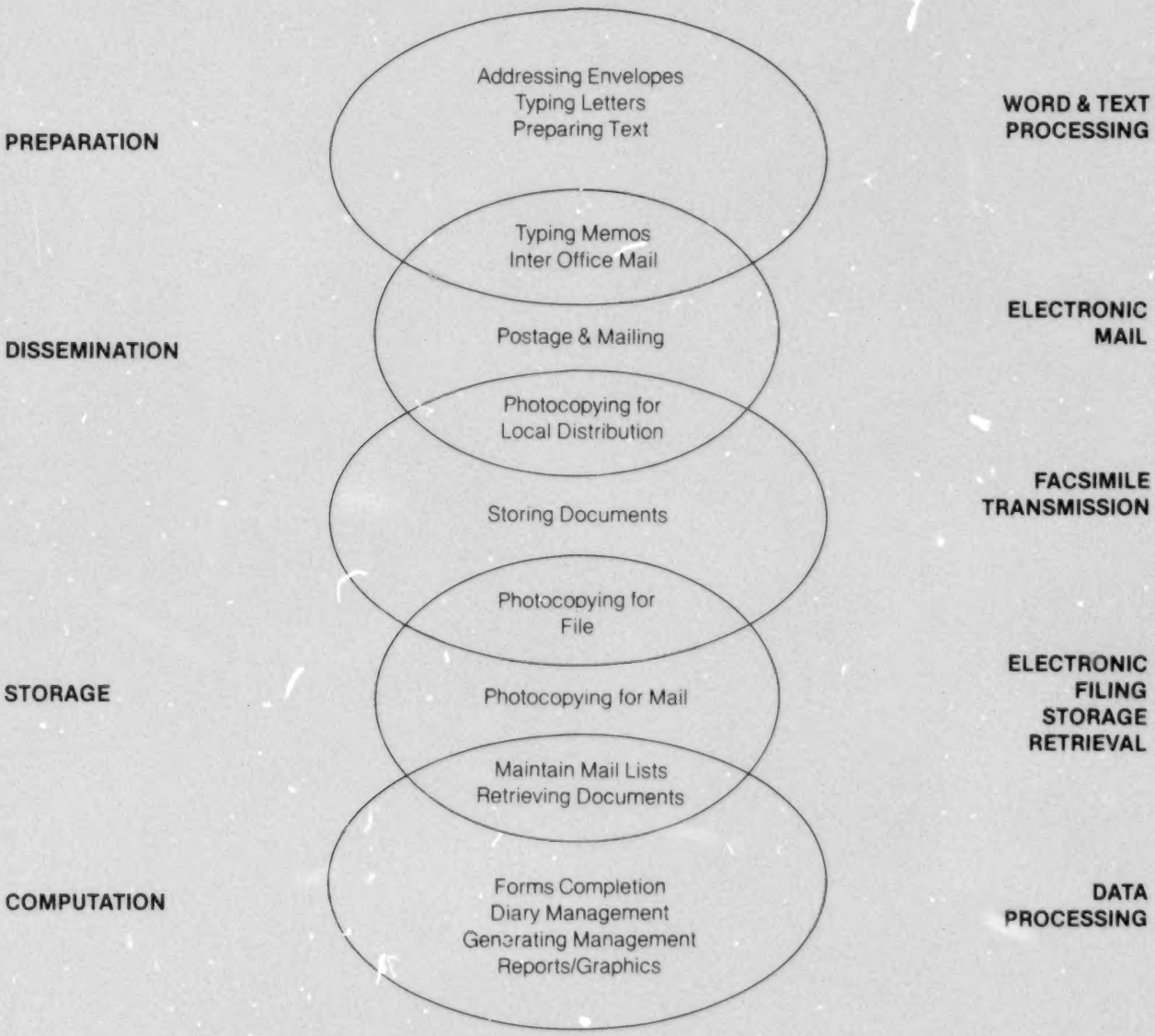

Figure 1 Information Processing
a typical task might involve some of the above integrated steps

2. The View from Industry and Commerce

5. Historically, technology has been developed and used primarily in manufacturing and by contrast offices tend to have a minimum of electronic aids. For some years yet, there will be offices with only a telephone, a calculator and perhaps an electric typewriter; but increasingly the price of equipment, public awareness, education and training will ensure that the benefits of modern communications and information processing by computer will have an impact on all offices.

6. The figures provided by IT82 Project Director Ken Barnes, at the closing IT82 Conference, showed that awareness had jumped from 17% to 62% and a survey of business attitudes indicated that 94% thought that Information Technology would make business more productive whilst 87% thought it would make UK companies more competitive. The type of information which was prepared by the Department of Industry for IT82 included special booklets and a bimonthly review of developments. "IT's business" provides a useful summary and continuing review of new developments without the technical complexities which tend to accompany text books or professional journal papers on such subjects as Electronic Filing, Electronic Mail, Facsimile, PABX, PSS, Prestel, Teletex, Teletext, Viewdata and Word Processing (References 6 – 11).

7. The manufacturers of office equipment have already moved from electronic typewriters to word processing and from simple telephone switchboards and copying machines to electronically controlled multi-purpose equipment. Now they are concentrating upon linking their "single unit" equipment via communication facilities to both other units of the same type and equipment offering different types of functions eg Telex, Viewdata, Facsimile Transmission, Computer Networks and Word Processing Workstations.

8. Traditionally, in the computer industry, the most difficult area has been the successful integration, for both hardware and software, of different types of equipment, especially units from different manufacturers. So it is not surprising that companies with experience in computing and telecommunications are the main participants in the Department of Industry promotion strategy on office automation (8). Although some of these activities started in June 1981, there has been no feedback yet. When the results of these promotions become available, there will be a strong emphasis on the technological aspects of the different implementations, but it will be most useful to determine what education or training was necessary as the new systems were introduced and to evaluate the final staffing requirements for these new developments.

9. A large number of staff from the larger and more sophisticated office based organisations will be able to contribute and benefit if they have received the best business/skills balance of education and training. In contrast, because of the complexities of full scale integrated office procedures, there have been, and will continue to be, a considerable number of small to medium size companies who will choose to start in a modest way and develop their systems as time, experience and finances permit.

10. A report of a computing workshop held in October 1982 (12) outlined the aspects of three office systems aimed at automating or assisting different office activities. The first example was aimed at a group of five managers, six secretaries and thirty professional staff in two locations. They utilised existing technology, incorporating a single terminal/work station design to provide the six major functions of diary management, casual word processing, electronic message switching, filing, information display and retrieval. The second example was aimed at the top layer of management of a major company operating from London. A large proportion of their time was spent in receiving and analysing telex information and combining current awareness information with existing company data. The new system involved office staff in organising and filing the latest information suitable for instant retrieval by the decision makers. The last example takes a document production requirement and is piloting electronic text generation.

11. Not much information was supplied concerning the staff changes or retraining necessary for these developments except that the users of the new systems were enthusiastic about the new technology. In an experimental or pilot implementation of new techniques, the existing staff are usually redeployed with appropriate training either in-house or by attending courses and any new staff recruited require new job profiles or specifications. Typical skill requirements include the use of word processing software, operation of electronic telex/telephone installations and familiarity with interactive

screen communications.

12. The management of the "old methods", "old with new methods", and finally "new methods" alone, evolves as changes take place and new procedures can benefit from the different patterns of working. However, as more of these new developments come into existence and stabilise, staff (from operatives to management) will be required from the start to work within this type of environment. Fortunately they will have the advantage of some self-development as their companies adopt more aspects of the new technology, yet they must start with some knowledge, understanding and skills to cope with the immediate task and future developments.

13. Taking the first example from the Computing Workshop, the likely staff developments/requirements can be examined in more detail. The six secretaries will require a business background and understanding of technology to utilise the full capabilities of their work station. Only casual word processing was specified (skilled operatives being employed in author locations for detailed work) so in-depth word processing skills are not required. They will also require the ability to utilise a variety of software interfaces for information retrieval, message switching, filing and accessing external information and data services eg Prestel and Telex. The often casual expressions used in verbal communication will need to be supported by a better level of literacy for composing and transmitting casual yet precise electronic messages. Also the facility to extract and compile information for managers, often of a numerical or statistical nature, will require a high standard of numeracy.

14. Some individuals of this calibre are already taking business or office courses hopefully with sufficient content to help them in their own personal long term development. However, in the future, more talented young school leavers will be attracted to a potential career in New Office Technology and will need the academic and practical challenge of a good business/office course.

15. The controversy of distributed or pooled typing resources now applies to the word processing function and most large organisations see the merits of both types of organisational structure. Typically, pooled resources will be used where authors from different departments will require the same types of stored documents eg contracts, presentation of accounts, tenders. In this situation, it becomes cost effective to employ Word Processing Operatives who concentrate on a small range of document types. Within these organisations there will be a need for Senior Operatives/Supervisors and Word Processing Training Officers all of whom are likely to require a broader business education as well as supervisory skills.

16. The professional staff and managers using these facilities will require an understanding of the technology associated with their requests and some training in the best way to communicate word processing or text presentation requirements. The most frequent complaint from operators is that authors put far less effort into an initial document knowing that it can be edited more easily. The economic compromise of a reasonable first draft version against continual editing needs to be emphasised to both author and operator.

17. Another industrial case study confirms this pattern of employment prospects for the word processing facilities and a similar pattern within the traditional secretarial and adminstrative role. Although the copy typist or audio typist may have transferred to the local or central word processing facility, the shorthand typist/junior secretary is now working for a group of staff using a generalised work station to deal with daily office procedures, filing, appointments, memos, etc. Groups of junior secretarial staff are supervised by the Group Secretarial Services Co-ordinator and, if the company is large enough, groups are controlled by a Division Secretarial/Administration Services Manager. The actual job titles are not important as they will vary between organisations, but the career path potential and typical job specification will only be a viable opportunity if the next generation of office staff can be given the appropriate educational training to cope with change.

18. Similarly, the most successful organisations will be those with a management structure prepared to be flexible and adaptable to methods including new technology. Some jobs can be deskilled – for example typing telex messages using an OCR font so that only the headers need adding for transmission. Others in a similar area of the office skills can be extended eg switchboard operators use information retrieval facilities to aid telephone number enquiries and access staff diaries thus providing a better customer service. Faced with these types of change, progressive

management can reorganise the telex and telephone facilities providing greater job satisfaction, co-ordination between similar services and economies of scale.

19. In addition, there will be an increasing tendency for traditional office tasks to merge with information-handling functions carried out on the shop floor. New technology is forging links between previously separated white and blue collar jobs, and changing the nature of both.

A storeman, for instance, can now find himself typing a parts issue figure into a computerised stock records system, and immediately a revised stock figure is available for accessing on visual display screens in the buying department, the cost office, and the works manager's office – as well as in the stores department itself. Similarly, the sales representative in his car or the engineer in the workshop find themselves providing, or using, office information – often without a piece of paper in sight. Information technology's curricular implications therefore range beyond the traditional office. Today's catering or engineering student needs to understand the basics of information technology, even though his/her understanding need not be at the same level as the secretarial, commercial or business student's.

Summary

20. The message from industry and commerce is that an increasing pace of change, new ranges of equipment and greater public awareness are creating new opportunities for staff who are prepared to maintain a flexible outlook and develop a range of business knowledge and skills:

a. The division between office, communications and computer equipment is disappearing and the technologies are merging;

b. The scale of developments varies from government promotions involving large investment and development of integrated office systems to the gradual introduction of technology in smaller organisations;

c. New developments are being most widely implemented in the areas of word processing and text handling, followed by internally transmitted messages between work stations, extended telephone and telex facilities and information retrieval with links to conventional computer systems. (Some aspects of electronic mail and communications system will expand as the number of subscribers increase);

d. Staffing requirements involve changes in function such as copy typist/audio typist to word processing operative with or without audio skills. There appears to be a need to develop general business/office courses to provide appropriate academic and practical challenges for the secretaries and administrative officers of the future, and to provide courses offering clerical office staff a versatile background to technological office duties;

e. Potential management personnel, graduates and members of professional institutions will require a much greater in-depth knowledge of office systems based on integrated new technology in order to develop a more flexible approach to implementing, controlling and interfacing with new office technology;

f. Areas of new office technology include information handling functions at shop floor level.

3. Current Developments by the Validating Bodies and Professional Organisations

21. Appendix B provides a list of the different syllabuses which have been examined, with appropriate notes concerning the content relevant to new technology. The individual subjects and group award schemes have been chosen as the ones most likely to need amendment or a change of direction as a result of the impact of new technology. Although some professional qualifications at degree level have been examined no attempt has been made to study the syllabuses of college polytechnic or university degree courses. However it is recognised that each level should reflect the educational requirements of a person prepared for employment in any business or industry using aspects of the new technology (see 20d, 20e and 20f).

Royal Society of Arts

22. The Examinations Board of the Royal Society of Arts was one of the first organisations to appoint a study group in 1979 to look into the probable effects of new technology upon office work and business administration. Their report *Office technology* (1) provides a concise assessment of the situation with appropriate recommendations for all organisations concerned about future developments in business education. The Board acknowledged its major role in implementing some recommendations and have subsequently revised some syllabuses, replaced others and added new subjects to their list of examinations. Work is continuing on reviewing and revising syllabuses but the main developments to date are listed below:

Non Examinable Information Processing Familiarisation Course 1981;
Word Processing Stage I Pilot Scheme 1982-1983;
Word Processing Stages II and III under development;
Information Processing I, II and III under development;
New Office Supervisory Studies Stage III 1982;
Background to Business Stages I and II to replace Commerce I and II;
Schools may apply for RSA Certification by submitting Mode 3 proposals for Keyboard Skills;
Teachers Certificate for Computer Education;
Teachers Certificate for the Use of Computers in Education;
Consideration of a Teachers Certificate in Business Communication.

Work is in progress on a set of Notes for Guidance for teachers, providing advice on possible ways of integrating the teaching of subjects which make up the Group Awards (Spring 1983). Examination centres may also apply to include word processing within the Diploma in Office Studies Stage I from 1983. The RSA has also played a major part in the proposal and support of an Information Technology in Business collection of materials for staff development. Further details of this development are included in Section 5 of this report.

Business Education Council*

23. The Business Education Council, since its inception in 1974, has developed courses with a central compulsory core of subjects which emphasise the need for the basic knowledge, understanding and skills necessary for everyone starting a business career.

In October 1980 a comprehensive guide to centres offering BEC courses (5) provided a technology update for each of the core and option modules within the courses. Thus moderators should now expect to find that centres have updated their courses by treating material in up-to-date ways including using modern office technology. Since then, work has started upon a more detailed revision of certain modules.

BEC General Award

24. The Board released in October 1982 the draft of some revised option modules for implementation not later than September 1984. These include Audio Typewriting, Office Typewriting and Use of Office Machines and Equipment.

A new module called Keyboarding and its Applications has also been issued as a draft option module specification. Other relevant subjects requiring revision are Clerical Services and Receptionist/Telephonist. A radical rewrite of the core modules for the General Award is expected if BEC modules are integrated with the 17 + Certificate in pre-vocational education. Currently some pilot schemes for Certificates in pre-vocational education include BEC courses.

* BEC have in hand at the time of printing, the revision of a number of modules associated with the General Award, new guidelines regarding Information Technology relevant to the Higher National Awards, and the development of new Post Experience Units in Word Processing.

25. After the issue of the 1980 guidelines (5) a review produced the following questionnaire results from institutions offering BEC General Level Awards

Questionnaire response	88%
Making curriculum changes	60%
Movement towards keyboard skills	20%
Acquisition of computer based equipment	31%
Acquisition of word processing facilities	25%
Supporting staff development	14%
Software acquisition	3%
No significant planned changes	8%

Although a considerable number of responses indicated attention to curriculum changes, the response in the other areas was disappointing.

BEC National Award

26. It is intended to set up a Working Party during 1983 to provide new specifications concerned with Information Technology and revise some of the existing options. Urgent updates to some subjects will be issued for September 1983. The most relevant subjects requiring office technology revision are:

Audio Transcription;
Introduction to Practical Administration;
Secretarial Services;
Secretarial Skills;
Typewriting I and II.

New specifications are likely to be available for implementation in September 1986 and should include new opportunities for the student who wishes to study data processing and obtain typewriting skills but who currently is unable to follow a course containing both topics.

BEC Higher National Awards

27. Higher National Schemes are college devised schemes which are periodically reviewed. Prior to the formal reapproval date, a moderator in conjunction with the Validating Committee can recommend the withdrawal of approval for any courses which are not meeting the issued guidelines. During 1982 two booklets were revised:

Illustrative material on the treatment of secretarial studies within courses leading to BEC Higher National Awards;

Illustrative material on core studies based on BEC Business Studies Board (B1) Course guidelines.

In particular, the first booklet (paragraph 2.2) places great emphasis that a Higher National Course should represent a balanced range of business related studies *without* over-specialisation. Therefore through the moderation and reapproval processes, these objectives should now be met by the centres submitting students for Higher National Awards in the area of Business/Office Studies.

BEC Post Experience Awards

28. Three awards were introduced during 1982 to supplement aspects of Business Administration concerning new technology:

Computer Studies for students with no prior knowledge;
Implementing Small Business Systems;
Information Technology for Managers.

Two awards are currently under consideration in the area of Management of Technological Change:

Employing People;
Managing the Office.

All these awards are suitable for mature students, those already working or intending to work in a relevant computer/information technology environment.

London Chamber of Commerce and Industry

29. The London Chamber of Commerce and Industry piloted two new single subjects in Information Processing and Word Processing during 1981/82. As a result, the Information Processing examination may now be taken as:

a. an option within the Private and Executive Secretary's Diploma;
b. an option within the Private Secretary's Certificate;

c. a compulsory section within the Information Processing Group Certificate;
d. a single subject.

The Word Processing examination may now be taken as:

a. an option within the Secretarial Studies Certificate;
b. a compulsory section within the Word Processing Group Certificates;
c. a single subject.

The corresponding two new group awards are based on the Communication and Secretarial Skills section with the addition of Information Processing or Word Processing respectively for the Information Processing Group Certificate or Word Processing Group Certificate. The draft syllabus for Business Computing (Higher Stage) focuses upon the business and financial aspects of computer applications.

The emphasis in the Information Processing syllabus extends the word processing skills to reflect the elements of sophisticated word/data processing techniques, typical information retrieval systems and new developments such as voice input.

Pitmans Examination Institute

30. The Pitman Examinations Institute has introduced several new syllabuses during the last two years and is currently developing a number of new topics to complement existing examinations. The general strategy is to provide a general subject foundation for understanding office technology and also subjects which test practical operator skills. Endorsements for new technology eg electronic memory typewriters, allow students in different establishments to utilise the full range of available equipment without constraining examination centres to the lowest common denominator. The new subjects Practical Word Processing (1982) and Word Processing Theory and Practice (1983) are similar to other examinations of this type except that Practical Word Processing is offered as an endorsement to either intermediate or advanced typewriting. The other new subject is at elementary level and is called Understanding Computers. This is a useful preparatory subject prior to courses of study in a commercial or technical area – although covering information processing, it does not contain a bias to either data processing or word processing.

Subjects currently under development for 1983-1984 are:

Practical Data Processing;
Information Processing;
Office Technology;
Keyboarding.

31. The Pitman Examinations Institute still visualise a large demand in the United Kingdom and Overseas for single subject examinations and the development of Group Certificates with a business context. In this area the accent will be on simplification without the removal of flexibility for the student. The new Higher Commercial Group Certificate recognises the need for a level of knowledge in commercial subjects required of a potential Office Supervisor. This new group award complements the existing Commercial Group Certificate, Basic Secretarial Group Certificate, Secretarial Group Certificate and Higher Secretarial Group Certificate. Developments in the area of keyboarding and note-taking are continually being reviewed in the context of changing technology requirements and current awareness amongst teachers and lecturing staff is promoted by a series of Pitman Conferences.

Professional Associations and Institutions

32. Most professional bodies are aware of the implications of information processing and office technology for their members and have acted accordingly to make appropriate changes to their syllabuses and provide short courses on these topics. Many play a significant role in mature student development and it is to be hoped that *all* professional bodies recognise the impact of office technology whether they are commercial or technically orientated professions. Some of the most relevant developments are noted below.

33. The Institute of Administrative Management has recently held conferences covering the new technology and reflects its policy of promoting new techniques via the *British Journal of Administrative Management*. Recent articles include 'The Changing role of the office', 'Stop the computer – I want to get off' and 'Effective information –

the impact of today's technology'. These contributions with a comprehensive abstracting service in each monthly issue, keeps the Institute members in touch with changes in technology. The syllabuses for the Certificate and Diploma in Administrative Management include appropriate topics and sections concerned with technology and management of change.

34. The Institute of Chartered Secretaries and Administrators has changed their office administration topic to Office Administration and Information Systems which is included in all three examination streams – Company Secretarial, General and Financial Administration and Public Service.

A Chartered Secretary or Administrator will have various responsibilities including planning and control of administration systems where understanding the role of new technology will become more important.

35. The Institute of Management Services have included a Computers and Computing Section within their Foundation Studies core of subjects for the Certificate examination. The optional subjects are Work Quantification I or Information Systems I. The core subjects for the Diploma examination do not include any computer/ information processing sections, but the Information Systems II and Computer Project Planning and Control subjects are available as options, as well as one on the Application and Use of Computers, which is basically for those majoring in Work Quantification.

36. The Association of Certificated Accountants provide a professional examination at level 1 with a paper on Numerical Analysis and Data Processing. The professional examination at level 2 includes the Organisation and Management paper which contains the topic Information for Planning, Control and Decisions. The Systems Analysis and Design paper looks at information systems in more detail. The final examination at level 3 consists of three papers where computer technology is introduced into the Auditing and Investigations paper. The Certified Accountants Diploma in Accounting and Finance, which is an internationally recognised course for non-accounting graduate professionals to gain specialist accounting knowledge for use in a management or commercial career, implies the use of technology within the content of the four examination papers.

37. The Association of Medical Secretaries, Practice Administrators and Receptionists has informed its members through various regional and national activities. In particular, a number of study days have been held which cover the specific implications of new technology in areas of medicine and medical administration. They have also revised their syllabuses for the subjects of Medical Clerical Duties and Medical Secretarial Practice and Office Procedures. The Medical Clerical Duties is a compulsory subject for the Medical Receptionists Course leading to the award of the Certificate of the Association. The Medical Secretarial Practice and Office Procedures is a compulsory subject for the Diploma and Certificate for Medical Secretaries. The Diploma in Practice Administration recognises the substantial developments in computer administration within medical practice and includes a section on Data Processing Statistics and Research.

Summary

38. The developments by validation bodies and professional organisations within the last two years reflect the urgency with which the implications of new office technology is viewed by these organisations – their efforts and achievements covering a wide range of student age, ability and career potential and the content including development of fundamental knowledge, understanding and implications and development of specific skills:

a. The majority of relevant syllabuses have been revised in detail or guidelines have been issued until revision is possible. Some revisions may be combined with the proposed development of 17 + pre-vocational courses;

b. A number of new subjects or components of group awards have been developed in the area of Word Processing and Information Processing. The single subjects provide the majority of operative level training at the moment;

c. Introductory courses such as Information Processing, Familiarisation, Keyboarding and its applications and Understanding Computers, provide subjects for pre-vocational students and the BEC Post Experience Awards provide an introduction and more detailed study of business aspects of the technology;

d. The career potential and requirements of the higher calibre student is being met by New Office Supervisory Studies, BEC Higher National Awards in Business/Office Studies, Private and Executive Secretary's Diploma and the Higher Commercial Group Certificate;

e. The professional organisations are keeping their members up to date and have revised their examination syllabuses.

4. Training Developments

39. Many training initiatives are developed in conjunction with the Manpower Services Commission. Principal areas of MSC involvement are covered in this section together with details of two other organisations which provide training courses in the areas of new technology. These examples are necessarily a very small subset of a wide range of commercial training facilities.

Manpower Services Commission

40. The MSC has included the provision for training in office skills since its introduction of the Training Opportunities Scheme (TOPS) in 1972. The philosophy of the TOPS courses is to provide training on demand via training providers for adult trainees. The courses were chosen to cover occupations and skills in demand and provide suitable training for staff development or change of career direction – the success of the courses being measured by the proportion of trainees finding employment using their newly acquired skills and knowledge. Many early courses were based at colleges of further education, but unfortunately many were bound by academic yearly timetables which were often educational rather than vocational and were usually derived from existing courses which had a wide variety of entry standards, contents, terminal aims and length. Gradually the emphasis moved towards standardised course formats supported by colleges, private colleges and commercial training organisations.

Early in 1981 the two publications concerned with Clerical and Commercial Training (2 & 3) recognised the change in clerical duties and skills, the most significant examples arising from totally new job specifications in the employment market eg Word Processing Operative, Word Processing Supervisor, VDU Operator. The MSC document *The way forward* (2) includes details of future TOPS courses designed to meet local labour markets and it is recommended that all include a non-examinable but obligatory topic called "Impact of New Technology" which should follow the content of the RSA Information Processing Familiarisation module. Other non-examinable, but obligatory topics which are recommended for the majority of courses are Business Communication, English, WP Familiarisation, Office Procedures and Job Seeking.

41. The MSC, in response to word processing developments, issued a booklet in 1981 (13) to disseminate its experiences to those schools and colleges about to introduce Word Processing Familiarisation into courses. More recent MSC development work has included practical training packages in the areas of Book-keeping, Wages, Keyboarding, Calculator Exercises, Financial Record Keeping, Computerised Payroll and Background to Information Processing. Some of these items are complete, others are being piloted.

42. Many of the previous developments are as a result of the New Training Initiative (NTI) which was the title of an MSC report in May 1981 which called for urgent and radical changes to training arrangements. The Government White Paper in December 1981 supported the MSC plans and outlined a new £1 billion Youth Training Scheme (YTS) guaranteeing from September 1983 a full year's foundation training for all those leaving school at the minimum age without jobs. Pilot NTI and YTS courses are operating now and include several with a new technology emphasis. In 1982 there was a great deal of press coverage (14 & 15) concerning the Information Technology Centres (ITECS) which are initially funded by the MSC and Department of Industry. Under the auspices of the Youth Training Schemes (YTS) they will also provide work experience, education and training for unemployed school leavers. Most students, having no formal qualifications, will be trained in the use of electronic office equipment, computers and basic workshop electronics.

43. At the other end of the training spectrum, the MSC has recently launched its "Open Tech" programme (16) for schemes of adult retraining. The most likely candidates for these courses will be people over 28 who want to change direction in their careers or find work again after a period of unemployment. Whereas TOPS students receive a weekly support payment, it is expected that employers or local authorities will support students for "Open Tech". At this stage, it is difficult to define the range of subjects or courses although currently submitted plans include micro electronics, process control and robotics, it may well be appropriate to include integrated office automation in this category.

44. At school level The MSC New Technical and Vocational Education Initiative (17) will mean that a pilot group of 14-18 year olds will be taught work skills which may range from older trades to keyboarding and software

expertise. Pilot schemes will run from September 1983 and the proposal is that the first two years of the scheme will act as a foundation course with general education but biased towards vocational qualifications. The 16-18 year olds will have a stronger emphasis on training geared to BEC, TEC or other qualifications.

45. Two typical MSC assisted schemes include the Datasolve Education Youth Training Scheme for Computers and Office Work and the Pitman Commercial Foundation Course. The first course aims to equip unskilled young people without previous experience to compete for employment in offices and particularly in computer or word processing related jobs. The 52 weeks contain 26 weeks of job related experience. One specific feature of this course is that Business Skills are taught by getting each group of students to run a real business (any profits being shared). It is recognised that it is the high calibre unemployed school leaver who can best benefit from this type of course. Although the course has only been running since 1981 the success rate for placements and range of jobs from programmer to data entry operator are extremely encouraging and currently the courses are offered at six centres. The Pitman Commercial Foundation Course takes unemployed 16 year olds in groups of 25-30, three times a year, currently at ten centres (1982). Under the Youth Training Scheme the students will receive a comprehensive foundation course in office studies with job orientated practical sessions and specific periods of job related experience.

46. In 1981 the MSC commissioned Research Bureau Limited to survey "The Effects of Text Processing Technology on Organisations and their Staff." This has highlighted the pace of development in word processing systems and the summary of results is included in a series of booklets which group the findings according to the job areas of Operators, Supervisors, Text Authors and Managers. (References 18-21.) Three working parties are currently meeting to explore these areas further. The Manager group is considering guidance needs of policy makers and managers in relation to the purchase of hardware and software and a study of Modern Office Technology. The Text Author Group is examining the area of output standards and problems associated with executives entering information directly or via dictation, written and verbal speech input. The Operator and Supervisor Group is investigating training skills, human problems, and definition of work roles.

Other Training Areas

47. Apart from the training courses organised by commercial companies in conjunction with MSC there are a wide range of courses covering the new technology market. A small selection of activities are listed here for reference.

48. The National Computing Centre (NCC) has been producing training materials for 14 years and their current range covers topics for specific skills such as programming, systems analysis and more recently material for operators and managers concerned with Word Processing, Micro-technology and the Electronic Office. All are suitable for in-company training and can be used by independent training organisations, educational establishments and for vocational guidance courses. Their booklet *NCC training materials* (22) gives complete details but typical examples include video materials for Computers at Work, the Electronic Office, Computing for Managers and audio cassettes for How to Choose your Word Processor, How to Choose your Small Business Computer. A study of the NCC booklist provides several titles in a series called *Office Technology in the 80's* eg Viewdata Systems, Facsimile Equipment, Electronic Mail Systems, Preparing for Teletex and Office System Printers.

49. The recently published "Industry in the 80's", a co-ordinated course of study for use in schools, contains various aspects of industry and business which can be used within courses at school or college level. This project was summarised in Appendix 5 of *Use of computers in business education (14-19 years)* (23).

50. At the leading edge of commercial development, the NCC has set up a number of information technology circles covering Office Technology, Data Processing, Communications and Security. The circles have been created to further the mutual exchange of information and lead to the generation of new ideas. Membership and the cost of joining a circle is aimed at industrial and commercial participants, although the NCC would welcome a representative from the educational sector to enable any appropriate developments/requirements to be fed back into education and training.

51. The Industrial Society Information Technology Unit promotes a wide understanding of the need for continuing technological change and encourages people to respond to the need for new skills and work practices. These objectives are achieved by providing advice, training and other services in four key areas:

a. Management and supervisory development for computing specialists and word processing staff;

b. The effective introduction and management of technology in the office and on the factory floor;

c. Awareness training for line management and the provision of neutral ground for the evaluation of good practice in technological change;

d. Advice and training in the selection and application of the most appropriate systems of educational technology.

52. Recent workshops have covered Word Processing – Pools or Puddles, Electronic Mail, Facsimile Transmission, Viewdata and Local Area Networks. Typical courses include word processing supervisor training for supervisors or managers of either clustered or dispersed word processing installations; managing people in a changing technological environment; policies and procedures for effective technological change; the supervisor's role in achieving successful technological change; involving employees in technological change.

53. As mentioned in paragraph 32 the professional bodies play an important part in mature student education and training. Similarly the Regional Management Centres are providing a wide range of opportunities for senior staff and managerial career development. In this respect mention should also be made of the recent DES initiative PICKUP (Professional, Industrial and Commercial Updating). This programme is encouraging colleges, polytechnics and universities to identify and meet mid-career updating needs of which those relating to new office technology will obviously play a significant part.

Summary

54. Training, whether commercially priced or government sponsored, is providing courses for all age ranges, for the employed and unemployed; at operative skills and management levels:

a. The MSC is involved in the support of training from immediate post school age to mature adult trainees;

b. The TOPS courses enable mature people to retrain for careers in areas where new opportunities are opening;

c. The ITECS and YOPS/YTS courses provide training to meet specific labour markets for the unemployed school leaver. These are often linked to local or regional requirements;

d. The "Open Tech" Programme could offer a higher technological level of training for mature adults involved in Office Technology;

e. Commercial interest in the MSC courses has grown as centres are being developed to train people in the different aspects of computer and office technology. High quality staff and staff development within these centres is a commercial necessity;

f. Most of the training for employed managers and supervisors is supplied by commercial training organisations, professional bodies and Regional Management Centres through short courses, in-company training and seminars;

g. The MSC, through its control of a wide range of courses, is able to research and develop effective training techniques and continually review the labour market, and its changing requirements in areas of new technology.

5. The View from Schools and Colleges

55. In order to estimate future requirements for teaching business/office studies courses in terms of meeting new syllabuses from the examination bodies and including new technology within standard or new courses, it is important to consider both school and college developments. Both types of establishment submit candidates for examinations so they will both be affected by curricular changes and any developments in this area of education.

56. Business studies in schools have traditionally held a low status and offered a career alternative to the less academically inclined students. Within sixth form work there has been a significant increase in the availability of 'A' level Economics and, to a lesser extent 'A' level Business Studies but rarely is the computer used in either. There is an increase in the number of BEC courses being offered at school level although the most frequently offered pattern is still single subject qualifications for Typing, Shorthand and Office Practice and again little use is being made of the new technology.

57. However, at least one local authority (Croydon) has produced a plan for a two year Department of Industry and Microelectronics Education Programme (MEP) funded project. This plan (24) specifies a core curriculum for the 5-14 age group, followed by Computer Studies, Computer Science or Appreciation Courses for the 14-16 age group and vocational courses for the 16-19 age group. Part of the funded project is to finalise the report and develop the Croydon Certificate of Computing Competence. The plan includes a comprehensive section upon resources in terms of equipment, software materials and staff development; topics which are relevant to any establishment wishing to support courses which include new technology.

58. The resources and initiative from the government funded Microelectronics Education Programme (MEP) are primarily influencing the schools sector but many of the project developments should provide a valuable asset to colleges. Apart from the Croydon project, the Information Technology in Business project based at the Royal Society of Arts is specifically aimed at in-service education courses for teachers normally teaching commercial and business studies and primarily concerned with 14-19 year olds in schools and colleges of further education (25). The Staff Development course will be concerned with Information Technology in the office with its curricular implications and the materials will have two main themes – the office and the technology. The package includes video programmes, text with overhead projector slides, and model education software for micro-computers. Another MEP project is developing a two-part series of software with teaching materials – Edword Education Word Processing for the BBC micro-computer and an Information Handling package similar to PRESTEL.

59. However, the MEP main activities are focused upon the development of regional centres which can disseminate information and assist with teacher training and curriculum development. The teacher training domains are related to four separate syllabuses and late in 1981 Guidelines for Communications and Information Systems (CAIS domain) were made available within MEP for in-service teacher training (INSET courses) by regional centres. The Business studies area within this document covers the need to familiarise teachers of *all* disciplines about the use of text/data facilities as well as the specific familiarisation courses required for business studies teachers who have had little or no contact with the influences of modern technology. Topic titles include "Word Processing and the Structure of Commerce and Business" and "Systems in Business".

60. Most centres have started the familiarisation process by introducing equipment techniques and computer software packages; and it is expected that the "Information Technology in Business" package (to be piloted February 1983) will form the basis for some positive detailed staff development.

61. Realistically the view from the schools must be focused on the future as most schools – even with their Department of Industry funded microcomputer have little chance of developing new technology aspects until staff are trained and more equipment is made available.

62. Unfortunately, the picture within many colleges is not much better. Those establishments which obtained equipment and started to introduce new topics two or more years ago, are usually those who have contributed to curriculum development through committees and working parties of the validating bodies and professional organisations such as the British Computer Society or Information/Word Processing Association. They have been pioneering the development of teaching materials from the usually unsuitable manuals supplied with commercial word

processing equipment or word processing software packages. Apart from the need to develop and pilot new examination courses, local demand for word processing operatives has meant that staff have had to concentrate on self development in the use and management of the new equipment which has usually left little time for exploring the wider implications. Those colleges who have developed a departmental strategy for the introduction of new technology and have pursued a staff development policy within the areas of business/office studies have spent the last few years struggling with the available resources and have only reached their present levels of competence by extreme hard work and personal effort.

63. One major project, undertaken by the FEU in conjunction with Gloucestershire College of Art & Technology, concerns the evaluation of curricula and hardware for vocational preparation computer literacy schemes (31). In particular the common core of topics covers general aspects of information hardware and software and optional modules include word processing and applications in office practice; business projects and communications networks with applications in retailing, stock control and general information technology. The materials currently under development, should be available in 1983 and will probably be useful for courses other than vocational preparation schemes.

64. Besides the inclusion of new technology within existing courses or leading to the new awards by the validating bodies, the local demand for short courses has increased the number of evening commitments and is in danger of overstretching the resources of the few trained teaching staff. For example (26): Information Processing Familiarisation for practising teachers or managers. 10 weeks 4.30 – 6.30 pm; and courses for experienced typists and secretaries, 12 weeks, 7 pm – 9 pm. School links – booking the word processing suite for use by school groups, provides the hands-on experience for secretarial 6th form students but can only be a limited resource as the equipment is in much demand for examination courses and there are usually waiting lists for all short courses.

65. Apart from those colleges who are able to offer short courses to local teachers, new technology is slowly being introduced into formal pre-service teaching training and specific evening courses and some short in-service day release or block release courses are now available. For example Word/Information Processing for Secretarial Studies Teachers, Teaching Methods related to Word Processing and Information Processing – a follow-on course (28).

66. In September 1981, the results of a survey by questionnaire of business studies departments (27), indicated the department strategy, available resources and their use and attitudes towards staff development. Briefly over 66% had little or no strategy towards the inclusion of information processing within their departments; over 50% had minimal access to computing facilities; 12% were unable to offer any word processing facilities; over 75% were using the resources primarily for computer and data processing options and over 60% had made little or no provision for staff development. Although these figures were an improvement upon the 1980 BEC Survey (paragraph 25) there is little to suggest that there has been a dramatic change in attitude during the last 12 months. The majority of departments still require a change in strategy, greater provision of suitable hardware and software, and a positive approach to staff development.

67. If these attitudes change and finance becomes available to equip the departments, there will still be a major shortage of trained staff and suitable software. The available places for in-service training are over subscribed and the business software development for education is a small proportion of the nationally funded MEP project – other developments being the inclusion of some computer programs during the production of a range of teaching materials (eg references 25 and 32).

Summary

68. The biggest problem in meeting both college and teacher training needs, is lack of sufficient numbers of experienced staff and enough suitable hardware and software both to teach students and enable adequate staff development to take place. Thus the prospect in some colleges is bleak. The majority are attempting to cope as best they can and the minority are setting the pace and trying to ensure that a broader base of technological innovation is included within courses:

a. The school sector is probably lagging behind the colleges in terms of numbers of staff and

establishments which have tackled the problems of new technology in teaching business/office courses;

b. The Government sponsored Microelectronics Education Programme is attempting to help the large staff development problem but with an emphasis on the school sector. However, from mid 1983, the Information Technology in Business project will be able to provide an urgently needed staff development course for teachers in schools and colleges;

c. Software and Teacher Training materials from the MEP projects should be of particular interest to *all* staff teaching the lower level courses.

There will be little impact on the current situation until:

i. Needs are recognised by those in authority;

ii. Staff are trained in new skills, new curricular objectives and management of technology resources;

iii. Students have enough access to suitable equipment within schools, colleges or at local centres;

iv. Enough suitable educational software has been developed;

v. Resource providers recognise some of the special needs and costs associated with providing access to new technology.

6. Conclusion and Document Summary

69. Section 3 and Appendix D provide a comprehensive summary of existing courses and proposed developments by validating bodies. Between them, every aspect of single subject skills, grouped awards and core subject developed education is offered with updated references to new technology. Some updating is complete – notably the introduction of new single subjects in areas of word processing and familiarisation level studies. Other aspects of co-ordinated education and training in a range of subjects are still moving slowly towards compulsory topics which will meet the changing state of office work, eg Oral and Written Communications, Numeracy, Commercial Knowledge and Information Technology.

70. The majority of young school leavers require a broad course of study with specific skills options. Currently, those requiring mid-career retraining probably need a similar type of course but with a lower emphasis on keyboard skills and office practice if they have been employed in an office environment. Eventually as more young people are exposed to a comprehensive course of study prior to work, the need to update mature office staff should decline. However, there will still be a requirements to offer qualifications at supervisory and administration levels for mature students.

71. As the proposed range of new examinations progress from the development and pilot stage, their impact and the speed of change within schools and colleges will be greatly affected by the help the validating bodies can provide in the form of Notes of Guidance and dissemination of materials developed for the pilot studies. Also, starting as soon as possible, a vast in-service staff training programme is required. As it will be necessary to instruct each teacher in elementary word processing skills, it is an ideal opportunity to ensure that the broader aspects of business systems and new technology are covered. The majority of teaching staff will require a course of similar structure to their students ie a core of topics enabling them to update their understanding of business systems and the new technology with specific options such as detailed word processing skills, detailed use of software packages for teaching business studies, managing computer/word processing resources and providing an electronic training office. The average "day course" introduces Word Processing Packages, Information Retrieval Packages, PRESTEL and Business Software which provides a shop window of the types of resources available for teaching staff. This is only meaningful to those who have enough accommodation and equipment to introduce the materials to students. The majority of staff have not had the benefit of this type of introduction and would probably be incapable of translating what they have seen into practical sessions for student courses without considerable extra guidance.

72. It is apparent from the current level of awareness in schools and colleges that teachers will not be able to meet the challenge through self development alone. Some establishments provide central computer facilities which can help the teacher with the technology problems ie choice, provision and maintenance of hardware with assistance in providing or obtaining suitable software. This can remove one major headache – the management of the resource, but all too often the Business Studies, Commerce and Secretarial departments are buying equipment first and experiencing the implications later. If the equipment is to be used effectively, it must be conveniently located, have appropriate technician support and be available as many hours as possible during the week including supervised but non-timetabled periods. Departments must initiate comprehensive development strategies for courses, equipment and staffing. It is not sufficient to change the department name without changing its educational objectives.

73. A range of equipment will be required for a number of years and flexibility within courses for students to gain experience and qualifications on the old and new equipment is required. Those establishments who are replacing all manual/electric typewriters with microcomputer workstations are removing some career opportunities with small local companies.

74. With the substantial government initiative in the area of business training and education, the numbers of commercial providers moving into youth training schemes is increasing. To be effective they are investing in both equipment and manpower resources which attracts further government support and funding. This can be to the detriment of similar courses supplied by local colleges. Similarly shortages of trained staff and equipment are restricting the amount of mid-career and management training which can be offered to local industry and commerce by colleges.

75. Although attention has been focused upon the areas of business education most greatly affected by the new office technology, the range of applications in industry is encompassing the 'shop floor' and other 'blue collar' work areas. The needs of students in these areas will need to be met with appropriate curricular changes.

Summary

76. The education and training opportunities are many and varied. In some respects, the availability of large government funded projects in training has generated a large interest in commercially organised training courses for the school leaver which could have an impact upon the role for colleges of further and higher education. There is a need for colleges to meet the new challenge in this area and be able to offer a comprehensive range of courses to school leavers as well as providing specialist retraining, and career enhancement opportunities. The range of examination qualifications is fairly extensive but both colleges and validating bodies must be prepared to move towards the wider implications of business studies courses during the next few years:

a. Although there exists a comprehensive collection of syllabuses relating to clerical procedures, secretarial studies, receptionist skills and business studies, there appears to be no general adoption of a core curriculum capable of dealing with a systems approach to new and expanding technology, information processing, communication and numeracy;

b. The introduction and effectiveness of education in new technology is restricted by the lack of suitably trained staff in schools and colleges;

c. There is a general shortage of support material and equipment for the teachers and students of office technology;

d. Many colleges are becoming less competitive in the provision of education/training for office technology compared to outside agencies – especially those agencies who are substantially funded by MSC;

e. Few colleges are adequately providing for mid-career and management training in office technology;

f. Office technology is not confined to traditional office workers.

7. Recommendations for Future Action

77. The first task is to familiarise resource providers with the need for accommodation, equipment, manpower and staff development resources to support the use of new technology in teaching business/office studies. Then, whilst the majority of educational establishments are organising the facilities, the validating bodies should be finalising changes to group awards, core orientated courses and large numbers of teaching staff should be attending development courses, so that they are fully prepared for the task ahead. In the latter task it would be useful if more teaching materials and suitable computer software were available and a comprehensive list of organisations and activities involved with these functions were to be produced to help teacher self development. For example see Appendix D.

a. A greater educational awareness of the new technology by groups such as teachers, advisers, managers, and LEAs, needs to be fostered.

b. Changes are required in the allocation and utilisation of teaching and learning resources in this area.

c. More staff development is required in all aspects of the new technology and in appropriate teaching and learning strategies.

d. Both local and national curriculum design in office technology is required to meet retraining, as well as initial training needs including those of workers outside the traditional office environment.

e. There is an urgent need for a co-ordinated review appraising the capacity of the existing pattern of curricular provision to meet forseeable changes in office technology.

APPENDIX A
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APPENDIX B
Syllabuses of Different Validating Bodies and Professional Organisations

It is recognised that all the validating bodies and professional organisations are continually reviewing and revising their syllabus details. In particular the areas of concern in this document are under active development and therefore this Appendix provides only a list of published syllabuses examined during November 1982. If specific new technology or business systems areas are appropriate, the relevant topic is itemised. Some of the development work is included in Section 3 of this document, but the latest details about any syllabus should be obtained from the relevant organisation.

1. **Royal Society of Arts**
New and Recent Examinations

1.1 Information Processing Familiarisation Course – wider technology aspects of the "office workstation" are not included.

1.2 Word Processing Syllabus Stage I – Stages II and III are not yet available.

1.3 Information Processing Stages I, II and III – under development.

1.4 Office Supervisory Studies Stage III – A Group Certificate

Compulsory
a. Communication Skills and Human Relations
b. Organisation and Techniques of Office Management

Options
a. Typing Services
b. Word Processing
c. Accounting.

If the candidate has passed the *current* RSA Office Practice State II examination, then the candidate will have covered some aspects of business systems and new technology, otherwise the compulsory topics in Stage III do not offer these aspects.

1.5 Background to Business Stages I and II
New Syllabuses to replace Commerce I and II.

1.6 Teachers Certificate for Computer Education – to impart the knowledge to teach examination and computer appreciation courses below 'A' level standard – for teachers of any subject matter.

1.7 Teachers Certificate for the Use of Computers in Education – to enable staff to evaluate and implement the application of the computer, to manage computing resources and be aware of the potential impact of educational computing in curriculum development and teaching methods – for teachers of any subject matter.

1.8 Teachers Certificate in Business Communication – under development.

Other Qualifications

1.9 Teachers Certificate in Shorthand – no new technology.

1.10 Teachers Certificate in Typewriting – only "awareness" of new technology.

1.11 Teachers Certificate in Office Procedures – updated.

1.12 Diploma in the Teaching of Secretarial Studies – candidates must possess the teachers certificate in Shorthand, Typewriting and Office procedures – as there is no time limit on the date of these awards, a current Diploma candidate may not have any experience with new technology.

1.13 Diploma for Personal Assistants – compulsory subjects include information processing within Office Services and Methods. New Technology is not included under Organisation of Conferences, sources of information, travel arrangements, telex messages, telegrams and internal communications. Office Skills Applied does not require any experience of modern technology workstations.

1.14 Certificate in Basic Clerical Procedures – Compulsory subjects provide communication, numeracy and background to business – however, the clerical machine operations to not include the use of new technology, only an awareness of developments.

1.15 Certificate in Basic Receptionist-Telephonist Skills – compulsory subjects as for 1.14, again only an awareness of new technology developments.

1.16 Practical Communications Profile – does not include information retrieval from modern technology devices.

1.17 Vocational Preparation (Distribution) Course – does not include general office or distribution aspects of new technology.

1.18 Vocational Preparation (Clerical) Course – does not include general office aspects of new technology.

Group Awards

1.19 Diploma in Office Studies – Compulsory topics do not include business systems or general aspects of new technology although Office Practice does include brief mention of word processors and awareness of technological changes. The new Notes for Guidance recommend that candidates should be aware of the impact and application of new technology and of computer language used in the office. They must also be given hands-on experience.

1.20 Diploma in General Reception – as 1.19.

1.21 Diploma in Secretarial Studies – Core subjects include Background to Business but Secretarial Duties only includes brief mention of new technology under sources of information. Office Practice as 1.19.

1.22 Diploma in Business Studies – core subjects include Background to Business but there is no compulsory topic including major aspects of new technology.

Single Subjects

1.23 Accounting III – includes a section on preparation and use of information in computer form.

1.24 Machine Accounting – no specific mention of computerised systems.

1.25 Audio-Typewriting – audio-keyboarding, for manual, electric, electronic or word processing equipment.

1.26 Book-keeping – no specific mention of computer systems.

1.27 Communication Skills in Business – updated.

1.28 Cost Accounting – no specific mention of computer systems.

1.29 Office Machinery – no use of integrated office workstations.

1.30 Office Practice – only brief mention of word processors and awareness of technological changes.

1.31 Reception Skills – no new technology references.

1.32 Secretarial Duties – only brief mention of new technology under sources of information.

1.33 Typewriting – limited to equipment without electronic mechanisms.

2. **Business Education Council**

2.1 BEC General Core Modules – do not include business systems or new technology except by implication.

2.2 Audio Typewriting – New draft syllabus includes operating a word processor from audio input and retrieving information from electronic storage devices.

2.3 Keyboarding and its applications – new draft syllabus includes new technology.

2.4 Office Typewriting – new draft syllabus includes manual, electric and electronic typewriters and some other office technology equipment.

2.5 Use of Office Machines and Equipment – new draft syllabus includes new technology.

2.6 Receptionist/Telephonist – no new technology references.

2.7 Clerical Services – no new technology references.

2.8 BEC National Core Modules – do not include business systems or new technology except by implication.

2.9 Detailed updating is still required for BEC National Option Modules eg Audio Transcription, Introduction to Practical Administration, Secretarial Services, Secretarial Skills and Typewriting I and II.

2.10 BEC Higher National Awards, B1 Course Guidelines now include new technology details and specific requirements for adequate computing facilities.

2.11 BEC Higher National Awards, Secretarial Studies Guidelines now include a requirement for a balanced range of business-related studies without over-specialisation and includes references to new technology topics.

2.12 Post Experience Award in Computer Studies – does not include wider aspects of information processing.

2.13 Post Experience Award in Implementing Small Business Systems – does not include the introduction of office technology aspects within computer business systems.

2.14 Post Experience Award in Information Technology for Managers – comprehensive range of topics concerned with information technology.

3. **London Chamber of Commerce and Industry**

3.1 Word Processing – new syllabus.

3.2 Information Processing – is the Word Processing syllabus with additions for communcations and data processing. However, the bias is towards word/text processing with no special data processing examples required for the processing operations or processing sections.

Group Awards

3.3 Private and Executive Secretary's Diploma – compulsory topics do not include business systems. Some aspects of new technology are included in Secretarial Administration.

3.4 Private Secretary's Certificate – compulsory topics include Structure of Business. Some aspects of new technology are included in Office Organisation and Secretarial Procedures.

3.5 Secretarial Studies Certificate – compulsory topics include Background to Business and Office Practice which cover some aspects of business systems and modern office technology.

3.6 The two new group certificates – Information Processing Group and Word Processing Group Certificates do not include aspects of business systems within the awards.

3.7 Business Computing (Higher Stage) – concentrates upon data processing topics and does not include the word/text processing interface for generalised information systems.

4. **Pitman Examinations Institute**

4.1 Practical Word Processing – available as an endorsement.

4.2 Word Processing Theory and Practice.

4.3 Understanding Computers – introduction to computing and information technology.

Group Awards

4.4 Commercial Group Certificate – if the candidate takes Office Practice, this includes some aspects of new technology. Information Processing will be included if Understanding Computers is chosen as an option. There is no detailed business systems content.

4.5 Higher Commercial Group Certificate – as 4.4. Also Secretarial Practice has the same technology content as Office Practice.

4.6 Basic Secretarial Group Certificate – does not include business systems or new technology unless elementary Office Practice is chosen.

4.7 Secretarial Group Certificate – Secretarial Practice and Word Processing Theory and Practice are options containing aspects of the new technology. Business Systems is not included.

4.8 Higher Secretarial Group Certificate -- as 4.7.

5. **Institute of Administrative Management**

5.1 Certificate in Administrative Management – comprises four papers in Office Administration, Methods and Systems, Manpower Administration with a co-ordinated case study. Both the first two papers include new technology and there is a specific section on mechanisation and automation.

5.2 Diploma in Administrative Management – comprises five papers in Administrative Management, Advanced Methods and Systems, Management Information and Control, Personnel and Organisational Behaviour and a co-ordinated case study: The first paper includes The Office in information provision and Management information requirements of decision making. The second paper includes Integrated Organisational Systems as well as Theoretical Aspects of Systems.

6. **Institute of Chartered Secretaries and Administrators**

From 30 subjects, three streams of four part examinations are available, ie Company Secretary, General and Financial Administration or Public Service. All three streams have a compulsory section called Office Administration and Information Systems which includes new office technology.

7. **Institute of Management Services**

7.1 Certificate – includes core subjects in Introduction to Management Services, Computers and Computing and Method Study. The Computers and Computing topic is biased towards data processing applications and the Information Systems I Option provides the general aspects of Information Technology.

7.2 Diploma – includes core subjects in Statistics, Financial Analysis, Organisation, Problem Solving and Human Relations. Information Systems II and Computer Project Planning and Control and Application and Use of Computers are options containing elements of new technology.

8. **Association of Certified Accountants**

8.1 Level 1 Preliminary Examination – comprises five papers in Accounting, Costing, Economics, Law and Numerical Analysis and Data Processing.

8.2 Level 2 Professional Examination – comprises nine topics in Auditing, Company Law, Taxation, Management Accounting, Quantitative Analysis, Systems Analysis and Design, The Regulatory Framework of Accounting, Advanced Accounting Practice and one option from:

a. Executorship and Trust Law and Accounts;
b. Organisation and Management;
c. Managerial Economics;
d. Public Sector Accounting.

Information for Planning, Control and Decisions will only be covered if a candidate takes option b. Systems Analysis and Design includes more detail about computerised systems.

8.3 Level 3 Final Examination – comprises four papers in Advanced Financial Accounting, Financial Management, Taxation and Tax Management, and Auditing and Investigations. The last paper includes aspects of computer audit.

8.4 Certified Diploma in Accounting and Finance – comprises four papers in Financial Accounting, Principles of Management, Financial Management and Management Accounting. Although no specific reference is made to modern technology, a great deal of the accounting information discussed and analysed in the four papers cannot be produced without the aid of new technology.

9. Association of Medical Secretaries, Practice Administrators and Receptionists

9.1 Medical Clerical Duties – includes Word Processing and relevant computer applications under Record Keeping. Other aspects of new office technology are not included.

9.2 Medical Secretarial Practice and Office Procedures – similar to 9.1. The reference to record keeping applications is missing but a section on Elementary Statistics and Collection of Data includes the capabilities of computers for medical and commercial office practice applications.

Group Awards

9.3 Certificate in Medical Reception – comprises papers in:

a. Administration and Legal Aspects relating to the National Health Service and Social Services;
b. Medical Clerical Duties;
c. Medical Aspects of Reception Work;
d. English.

Some technology aspects are included in paper b.

9.4 Certificate and Diploma for Medical Secretaries – comprises four papers and one or two RSA Stage II Certificates in Shorthand/Typewriting and Audio/Typewriting. The four papers are a. and d. above, together with:

b. Medical Secretarial Practice and Office Procedures;
c. Medical Aspects of Secretarial Work.

Some technology aspects are included in paper b.

9.5 Diploma in Practice Administration – comprises seven sections and a project. New technology is included in the section on Data Processing Statistics and Research but has a bias towards data processing.

APPENDIX C
Glossary of Terms

Integrated Office Automation (Electronic Office)

A full Office Automation system totally integrates word processing, management communications and advanced text management with data processing. Such systems provide networking capability to support both management and administrative workstations and feature:

Word Processing

- Text creation and editing
- Filing and retrieval
- Abbreviation libraries
- List processing

Advanced Text Management

- Proof reading
- Hyphenation
- Language translation

Electronic Mail

- Creation, transmission and reception of notes and memos
- Distribution of documents
- Annotation
- Acknowledgement of receipt
- Security coding

Management Support

- Electronic intray
- Calendar management, diary facilities and holiday chart
- Scheduling of meetings
- Reminder files
- Telephone log

Management Information

- Queries
- Reports
- Modelling
- Applications

Correspondence Management

- Filing and indexing
- Retrieval of documents. Archiving
- Filing codes
- Report facilities

Most systems can be readily enhanced from a basic initial configuration in accordance with a specified development plan. It is usually necessary and good practice to deal with a major supplier for this type of provision.

Word Processing

Word Processing (WP) is computer-aided authorship, editing, storage, revision and printing of text. The system itself consists essentially of a keyboard, an electronic memory, a display screen of some type and a printer. At its simplest, WP is an enhancement of the typing function and offers a limited filing and retrieval capability. There are two main forms of Word Processing equipment.

a. The stand-alone is a microprocessor based unit, capable of operating independently of the processing and control facilities of any other unit. Typing is performed through a typewriter-like keyboard, which usually has additional command keys to enable WP to be performed with the minimum of effort. As text is keyed, it is stored in an internal magnetic memory at the same time appearing on a Visual Display Unit (VDU), similar to a TV screen, enabling the typist to correct immediately obvious mistakes. After being keyed into the system, the text may be printed or stored on some external magnetic facility for future retrieval, modification and printing.

b. The shared-logic is a WP system which may be micro or mini computer based and which provides processing, storage and printing facilities for several terminals. The magnetic storage is controlled by a central processing unit. The printing facilities are usually shared between operators and many computers can be programmed to queue the output for printing.

BEC
Business Education Council

CAI
Computer Aided Instruction

CAL
Computer Assisted Learning

CBL
Computer Based Learning

CBT
Computer Based Training

CMI
Computer Managed Instruction

CHESS
Computers in Higher Education Software Scheme

Electronic Filing
Information that was once paperbound can now be stored in machine readable form, thus saving valuable office space and often minimising selection and retrieval times.

Electronic Mail
Messages can be sent between individuals via interactive systems operated through terminals or TV screens, as well as through telex and facsimile devices.

Electronic Message Switching
A message switching system is a method of conveying text between teleprinter-type terminals or VDU's, but not instantaneously, therefore it is not suitable for conversation. (The telephone system uses Circuit Switching which is a continuous stream of data or speech from source to destination).

Facsimile Transmission
The transmission of images or documents from one location to another; a document is placed in the device and the image is then 'tele-copied' and reappears on the receiver of the recipient.

Hardware
The physical entity of a computer installation – the equipment.

Header Block
A block of information placed at the beginning of the telex message which specifies the appropriate details for the message recipient.

Information Retrieval
This is the name given to the process of recovering specific information from stored data.

Interactive System
This is a system which allows the computer and the end user to communicate with each other via "interactive" terminals.

LCCI
London Chamber of Commerce and Industry.

LAN
Local Area Network – The installation of a special cable enables interactive communication between terminals in different offices or even different buildings. 'BUS' and 'ring' systems are examples of local area networks.

MSC
Manpower Services Commission.

NCC
National Computing Centre.

NTI
New Training Initiative.

OCR
Optional Character Recognition is the machine recognition of stylised characters by light sensing methods.

PABX
Private Automatic Branch Exchange. A PABX can handle not only telephone calls, but a range of functions including conferencing facilities, queueing of incoming calls, plus data and voice switching.

Packages
Application packages are a set of specialised programs and associated documentation to carry out a task eg stock control.

Packet Switching
Data is held in "packets" and transmitted and received as capacity becomes available in the system.

Pools/Puddles – Clustered/Dispersed
Terms to define a policy of individual workstations or small/large groups of workstations.

PRESTEL
The Trade name for British Telecom's public viewdata service.

Program
A program is a complete set of program statements which perform a specific task.

Programmer
A programmer is a person responsible for writing computer programs.

PSS
Packet Switched Service – British Telecom's public data network which uses packet switching.

RSA
Royal Society of Arts.

Software
This is a term used for any type of program, whatever its purpose. Often the term can include documentation as well as computer programs.

Storage Media
These are materials in which data is recorded in a coded form – usually magnetic in the form of magnetic cards, magnetic tape or magnetic disks.

Systems Analysis
This is the art of analysing methods of performing a task.

Teletex
This service provides higher speeds, improved quality output, with better editing and processing capabilities than the usual telex service.

Teletext
The generic term for broadcast text systems which can be received on television sets (Ceefax for BBC1 & 2 and Oracle for ITV).

Terminal
A term used to describe any input/output device which is used to communicate with the computer.

TOPS
Training Opportunities Scheme.

UBI
Understanding British Industry.

Viewdata
Internationally standardised computer based systems which allow digitally encoded text to be transmitted using telephone lines, then decoded and displayed on advanced technology TV sets or terminals.

Visual Display Unit
VDU displays output from the computer. When it is attached to a keyboard, the complete unit becomes an interactive terminal device.

Workstation
The office desk of the future – it could include various electronic information handling devices including the telephone, facsimile, view data, teletex and other information technology developments.

YTS
Youth Training Scheme.

APPENDIX D
Activities in the Area of New Office Technology

British Broadcasting Corporation.
In 1984, the BBC's Continuing Education Television Department is planning, as part of its wider computer literary project, to broadcast a five programme series on the impact of information technology on office work. Work has not yet started on the programmes but it is expected that the target audience will be those who are in managerial or supervisory positions in offices and also students on courses with a business orientation. But the programmes will certainly be of interest to a wider public.

Microelectronics Education Programme (MEP)
Published reports, materials and software.

British Computer Society
Specialist Groups.
The Word Processing and Office Automation Group.

Council for Educational Technology (CET)
For CET News, CAL News and Information Sheets (29).

Understanding British Industry (UBI)
For *Micro-electronics – a guide to information sources* (30).

Inner London Education Authority (ILEA)
Business Studies/Computer Literacy Pack including Assignments, Wallcharts, Multiple Choice, Flowcharts, Audio Material and Computer Software.

Computers in Higher Education Software Scheme (CHESS)
Working Groups in business, accounting and office studies.

Information Processing in Education Group
Founded by Mrs J Stananought Salford College of Technology.

Information/Word Processing Association
A bibliography prepared by Mrs E Messum for the 1981 Educational Summer School is being updated ready for the Exhibition in May.

FEU
Work in the areas of computing and office technology (references 31 – 33).

APPENDIX E
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Institute of Management Services
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Participants (200 representatives from schools and colleges) attending the Pitman Conference – "Expanding your Secretarial Teaching" 13 November 1982 at Chester College of Further Education.

Participants (teacher and advisers) attending the MACE CAIS Conference on 22 and 24 November 1982.

FEU Publications

Towards the electronic office is one of a number of FEU publications intended to inform teachers and others and to stimulate professional discussion about matters of concern to the FE service.

Other FEU publications in the Occasional Paper series include:

Microelectronics in FE: some personal perceptions. October 1981. (Order No. 9598)

This report by Dr Ken Dean Principal of South East London College describes, from a personal point of view, a fast moving field of activity. The document should help, in part at least, the education system to appreciate the nature of accelerating technological change, which is distorting and elongating the conventional spectrum of skills that are required by society. On the basis of this report, there are few skills that we can discard at the moment from educational programmes. Students generally will require more not less skills to cope with changing jobs and technology.

Computer Aided Design in FE: some suggestions on the inclusion of CAD topics in mechanical engineering courses. November 1982. (Order No. 9826)

This document, by Peter Ingham of the City of Birmingham Polytechnic, is intended to give guidance to those concerned with the introduction of Computer Aided Design (CAD) into technical curricula. Whilst specially related to mechanical engineering, it should also prove useful to those in other disciplines. The author considers as inevitable the widespread adoption of CAD by British Industry. Further education will, therefore, have an obvious role to play in CAD development, if it is to remain a significant contributor to technological updating.

Copies of these documents (which are free of charge) are obtainable, while stocks last from the Publication Despatch Centre, Department of Education and Science, Honeypot Lane, Canons Park, Stanmore, Middlesex HA7 1AZ.

A complete list of FEU publications is also available from the above address.

The FEU has a number of Research projects (RP's) ongoing in the microelectronic field:–

RP 55 Computer literacy in vocational preparation schemes.
RP 59 Review of microelectronics in FE.
RP 65 Robotics – a curriculum module for technicians.
RP 80 Computer assisted numeracy profiling.
RP 86 A computerised profiling scheme for numeracy, communications and media studies.
RP 87 Computer-aided profile assessment and curriculum design across a college of FE.
RP 94 Computer appreciation for all full-time and part-time day students.
RP 104 Introduction of computer studies and "hands-on" experience into lower level courses.
RP 106 Word processing curriculum review.
RP 108 Microcomputer use for FE students.
RP 110 A computer based curricular provision for rural communities.
RP 118 Computer literacy for UK shipping management.
RP 119 The implications on FE curricular of the introduction of the robot.
RP 120 Identifucation of training requirements in computer-aided engineering for smaller firms.
RP 130 Information technology in FE.
RP 151 Computer aided design and manufacture.

Details of these Projects are available from FEU, Room 5/89, Elizabethan House, York Road, London SE1 7PH.